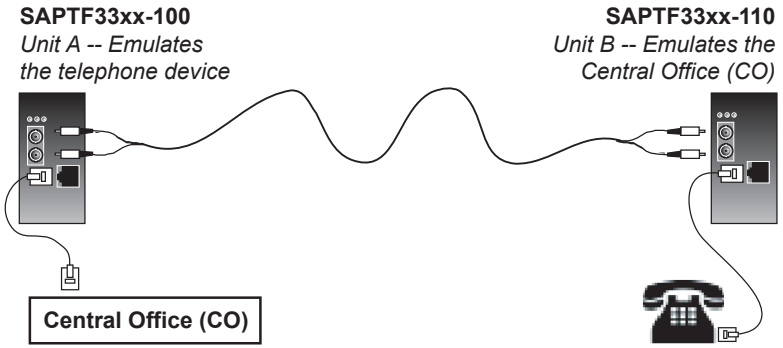
SAPTF33xx-1xx in the Network

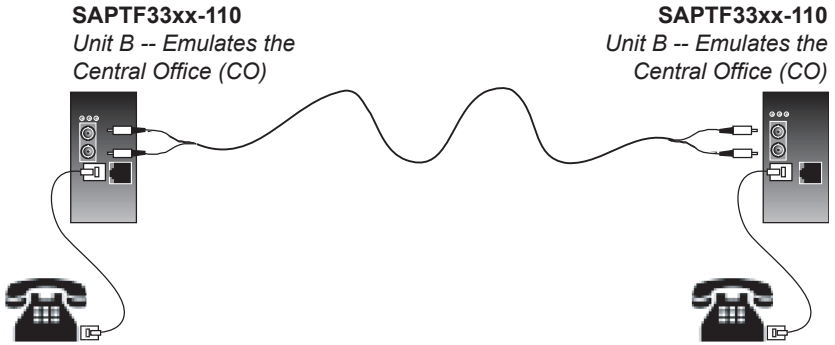
Standard Configuration

One Unit A device (SAPTF33xx-100) and one Unit B device (SAPTF33xx-110) are required for the standard configuration. The Unit A device is connected to the Central Office (CO) while the Unit B device is connected to a telephone device.



Automatic Ring-Down Configuration

Automatic Ring Down (ARD) is a dedicated, point-to-point voice system. When one telephone is taken off-hook, the other telephone rings, without the need to dial. Two Unit B devices (SAPTF33xx-110), connected via the fiber ports, are required for this mode of operation; with a telephone device at each end.



Installation

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when setting the jumpers. Failure to observe this caution could result in damage to, and subsequent failure of, the media converter.

Setting the Jumpers

1. Using a small screwdriver, remove the screws that secure the cover to the media converter and carefully remove the cover.
2. Locate the jumpers on the circuit board.
3. Using small needle-nosed pliers or similar device, move the jumper to the desired position. (Refer to the drawings below.)
4. Carefully replace the cover on the media converter and replace the screws to secure the cover.

Standard / Automatic Ring-Down

The jumper labeled "JP1" is used to switch between the Standard or Automatic Ring-Down configuration and is located on the ***top*** circuit board of **Unit B (SAPTF33xx-110)**.

The drawing below illustrates the jumper settings.

- Set jumper JP1 on the Unit B device to the ***Standard*** setting when using the Standard configuration (described on page 4).
- Set jumper JP1 on ***both*** Unit B devices to the ***Automatic Ring-Down*** setting when using the Automatic Ring-Down configuration (described on page 4).

US / EU Telephone Regulation

The jumper labeled "US EU" is used to switch between the US or EU telephone configuration and is located on the ***top*** circuit board of **Unit A (SAPTF33xx-100)**. This feature is required to comply with the EU TBR21 telephone regulation. The jumper has been set at the factory to the US setting as the default.

The drawing below illustrates the jumper settings.

- Set jumper "US EU" on the Unit A device to the ***US*** setting if the device is to be used with US-based telephone systems.
- Set jumper "US EU" on the Unit A device to the ***EU*** setting if the device is to be used with European-based telephone systems.

Installation -- Continued

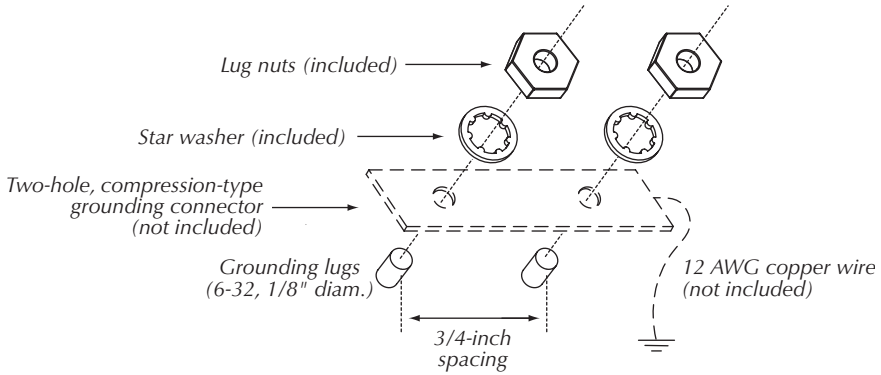
Grounding the Media Converter

The SAPTF33xx-1xx single-slot chassis comes equipped with grounding lugs located on the back panel. They require a grounding conductor wire terminated with a **two-hole, compression-type, grounding connector**. The grounding wire -- which must be a copper conductor -- is not included with the chassis and **must be provided by the customer/installer**.

The electrical conducting path from the single-slot chassis must:

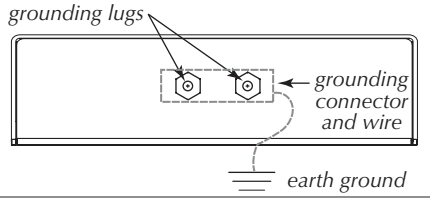
- Flow via the grounding lugs to the common bonding network (CBN).
- Be of sufficiently low impedance to conduct fault currents likely to be imposed on the media converter, and
- Enable proper operation of any over-current protection devices.

The conductor must be fastened to the grounding lugs with the enclosed anti-rotation star-washers and lug-nut fasteners. The applied torque required to the connector lug-nut fasteners is specified by the connector's manufacturer.



To properly ground the SAPTF33xx-1xx single-slot chassis:

1. Obtain one (1) grounding conductor (12 AWG copper wire gauge or larger) with a two-hole, compression-type, grounding connector.
2. Attach the grounding conductor to the converter by placing the two-hole connector onto the grounding lugs and fasten with the enclosed lock-washers / lug-nuts at the proper torque (per the manufacturer's specification).
3. Attach the opposite end of the grounding conductor to the common bonding network (CBN).



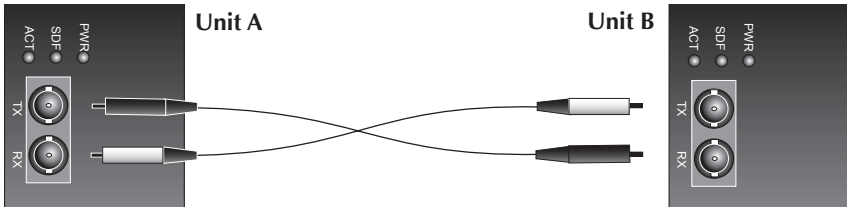
Installation -- Continued

Installing the Cable -- Standard Configuration

NOTE: Unit B MUST be configured for Standard Configuration (see page 4).

Fiber

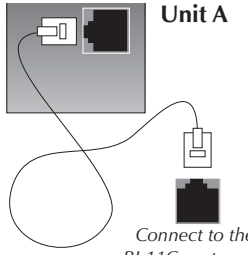
1. Locate or build fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to **Unit A** (SAPTF33xx-100) as described:
   - Connect the male **TX** cable connector to the female **TX** port.
   - Connect the male **RX** cable connector to the female **RX** port.



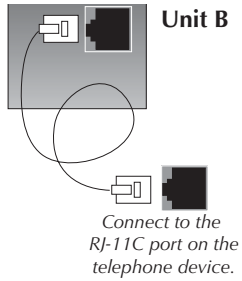
3. Connect the fiber cables to **Unit B** (SAPTF33xx-110) as described:
   - Connect the male **TX** cable connector to the female **RX** port.
   - Connect the male **RX** cable connector to the female **TX** port.

Copper

1. Locate or build copper cables with male, RJ-11C connectors installed at both ends.
2. Connect the copper cables to **Unit A** (SAPTF33xx-100) as described:
   - Connect the RJ-11C connector at one end of the cable to the RJ-11C port **on Unit A**.
   - Connect the RJ-11C connector at the other end of the cable to the RJ-11C port **on the Central Office**.



3. Connect the copper cables to **Unit B** (SAPTF33xx-110) as described:
   - Connect the RJ-11C connector at one end of the cable to the RJ-11C port **on Unit B**.
   - Connect the RJ-11C connector at the other end of the cable to the RJ-11C port **on the telephone device**.



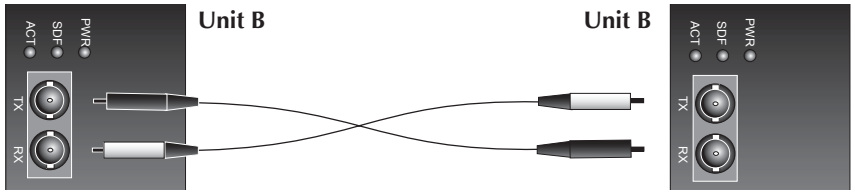
Installation -- Continued

Installing the Cable -- Automatic Ring-Down Configuration

NOTE: Both Unit B's MUST be configured for Automatic Ring-Down (see page 4).

Fiber

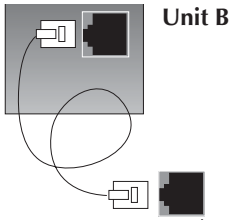
1. Locate or build fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the **first Unit B** (SAPTF33xx-110) as described:
   - Connect the male **TX** cable connector to the female **TX** port.
   - Connect the male **RX** cable connector to the female **RX** port.



3. Connect the fiber cables to the **second Unit B** (SAPTF33xx-110) as described:
   - Connect the male **TX** cable connector to the female **RX** port.
   - Connect the male **RX** cable connector to the female **TX** port.

Copper

1. Locate or build copper cables with male, RJ-11C connectors installed at both ends.
2. Connect the copper cables to **both Unit B**'s (SAPTF33xx-110) as described:
   - Connect the RJ-11C connector at one end of the cable to the RJ-11C port on the **first Unit B**.
   - Connect the RJ-11C connector at the other end of the cable to the RJ-11C port **on the telephone device**.
3. Connect the copper cables to the **second Unit B** (SAPTF33xx-110) as described in step 2.



Connect to the RJ-11C port on the telephone device.

Operation

Power the Media Converter

NOTE: The external power supply provided with this product is UL listed by the power supply's manufacturer.

AC

1. Install the barrel connector of the AC power cord to the external power connector on back of the media converter.
2. Connect the AC power cord to the correct voltage AC rack or wall socket.
3. Verify that the media converter is powered by observing the illuminated LED power indicator light.

DC

Consult the user's guide for the Transition Networks SPS1872-xx DC external power supply for powering the media converter.

Status LEDs

Use the status LEDs to monitor the SAPTF33xx-1xx media converter operation in the network.

PWR (Power)

On = The media converter is connected to external power.

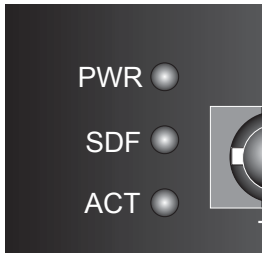
SDF (Signal Detect Fiber Link)

On = The fiber link is active.

ACT (Activity)

On = The telephone device is in use (off-hook).

Flashing = The telephone device is ringing or pulse-dialing.



Operation - Continued

Loop-Start Operation

Loop-Start Service -- commonly known as "Plain Old Telephone Service" (POTS) -- is the primary analog signaling method used between telephone switches such as the Central Office (CO) and a telephone device. Loop-Start provides a way to indicate on-hook and off-hook conditions, which facilitates outgoing and incoming calls in a voice network.

When a customer wants to make an ***outgoing*** call, he or she takes a telephone device off-hook. This action completes the loop, which signals the CO that a customer desires to use the telephone line. To signal the customer of an ***incoming*** call, the CO applies a ring voltage to alert the customer.

The three states of the Loop-Start signaling protocol are described below:

Idle State (On-Hook)

1. The CO applies a battery voltage to the ring lead and monitors the tip-ring current for closure of the tip-ring.
2. The telephone device draws less than 10 µA of from the line while waiting for the superimposition of the ringing voltage over the ring lead.

Telephone In-Use (Off-Hook)

1. The customer takes the telephone device off-hook, drawing a minimum of 20 to 30 mA of current.
2. The CO senses the tip-ring current and issues a dial tone on the line.
3. Communication can now begin.

Central Office (CO) Rings the Telephone

1. The CO superimposes the ringing voltage over the ring lead battery.
2. The telephone device uses the ring voltage to operate the ringer, which alerts the customer of an incoming telephone call.
3. The customer takes the phone off-hook, which closes the tip-ring connection and allows the tip-ring current to flow.
4. The CO senses the DC current from the telephone device and connects the call to the telephone line.
5. Communication can now begin.

Cable Specifications

The physical characteristics must meet or exceed FCC part 68 specifications.

Copper Cable -- Category 1

Either shielded (STP) or unshielded (UTP) twisted-pair is acceptable.

Gauge:	24 to 22 AWG
Maximum # Nodes:	2
Maximum Cable Length:	5 meters (16.4 ft) (Unit A and CO) 5 km (3.1 mi) (Unit B and telephone)

Fiber Cable

Bit error rate:	≤10-9	
Single mode fiber (recommended):	9 µm	
Multimode fiber (recommended):	62.5/125 µm	
Multimode fiber (optional):	100/140, 85/140, 50/125 µm	
SAPTF3311-100, SAPTF3311-110	1300 nm multimode	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Link Budget:	11.0 dB	
SAPTF3313-100, SAPTF3313-110	1300 nm multimode	
Fiber Optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Link Budget:	11.0 dB	
SAPTF3314-100, SAPTF3314-110	1310 nm single mode	
Fiber Optic Transmitter Power:	min: -15.0 dBm	max: -8.0 dBm
Fiber Optic Receiver Sensitivity:	min: -31.0 dBm	max: -8.0 dBm
Link Budget:	16.0 dB	
SAPTF3315-100	1310 nm single mode	
Fiber Optic Transmitter Power:	min: -27.0 dBm	max: -10.0 dBm
Fiber Optic Receiver Sensitivity:	min: -34.0 dBm	max: -14.0 dBm
Link Budget:	13.0 dB	
SAPTF3315-110	1310 nm single mode	
Fiber Optic Transmitter Power:	min: -8.0 dBm	max: -2.0 dBm
Fiber Optic Receiver Sensitivity:	min: -34.0 dBm	max: -7.0 dBm
Link Budget:	26.0 dB	
SAPTF3329-100, SAPTF3329-110 **SAPTF3329-101, SAPTF3329-111**	1310 nm single mode	
Fiber Optic Transmitter Power:	min: -13.0 dBm	max: -6.0 dBm
Fiber Optic Receiver Sensitivity:	min: -32.0 dBm	max: -3.0 dBm
Link Budget:	19.0 dB	
SAPTF3329-102, SAPTF3329-112 **SAPTF3329-103, SAPTF3329-113**	1310 nm single mode	
Fiber Optic Transmitter Power:	min: -8.0 dBm	max: -3.0 dBm
Fiber Optic Receiver Sensitivity:	min: -33.0 dBm	max: -3.0 dBm
Link Budget:	25.0 dB	

The fiber optic transmitters on this device meets Class I Laser safety requirements per IEC-825/CDRH standards and complies with 21 CFR1040.10 and 21CFR1040.11.

RJ-11C Connector Specification

Unit A (Telephone Emulation)

Connector:	RJ-11C
Impedance:	600 Ω
REN:	0.4 B
Loop Current:	10 to 100 mA
Insertion Loss:	0.0 ± 1.0 dB at 1000 Hz (When both ports are terminated at 600 Ω.)

Unit B (Central Office Emulation)

Connector:	RJ-11C
Impedance:	600 Ω
Battery Source:	48 VDC +/- 5V
Ringing Supply:	90 Vp-p
RIng Frequency:	15-30 Hz (Reproduces the frequency detected by Unit A.)
Ring Cadence:	Reproduces the cadence detected by Unit A.
Insertion Loss:	0.0 ± 1.0 dB at 1000 Hz (When both ports are terminated at 600 Ω.)

Technical Specification

For use with Transition Networks Model SAPTF33xx-1xx or equivalent

Standards	FCC Part 68, TBR21	
Dimensions	3.6" x 4.5" x 1.8" (91 mm x 115 mm x 45 mm)	
Shipping Weight	1 lb. (0.45 kg) (approximate)	
Power Consumption	7.0 watts	
Power Supply	12VDC, 0.8 Amp (North America, Europe, UK) 12VDC, 1.25 Amp (Latin Am., Japan, N.Z., Australia, S. Africa) The external power supply provided with this product is UL listed by the power supply's manufacturer.	
MTBF	47,000 hours (MIL217F2 V5.0) (MIL-HDBK-217F) 115,000 hours (Bellcore7 V5.0)	
Environment	Tmra*: Storage Temp: Humidity: Altitude:	0° to 50°C (32° to 122° F) -15° to 65°C (-4° to 122°F) 5 to 95%, non condensing 0 to 10,000 feet
Warranty	Lifetime	

*Manufacturer's rated ambient temperature.

The information in this user's guide is subject to change. For the most up-to-date information on the SAPTF33xx-1xx media converter, view the user's guide on-line at: www.transition.com.

Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.

CAUTION: Visible and Invisible Laser Radiation When Open. Do Not Stare Into Beam Or View Directly With Optical Instruments.

CAUTION: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Troubleshooting

1. Is the PWR (power) LED illuminated?

NO

- Is the power adapter the proper type of voltage and cycle frequency for the AC outlet? (See "Power Supply" on page 12.)
- Is the power adapter properly installed in the media converter and in the outlet?
- Does the external power source provide power?
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

YES

- Proceed to step 2.

2. Is the SDF (signal detect fiber Link) LED illuminated?

NO

- Check the fiber cables for proper connection.
- Verify that the TX and RX cables on the first media converter are connected to the RX and TX ports, respectively, on the second media converter.
- Contact Technical Support: US/Canada: 1-800-260-1312, International: 00-1-952-941-7600.

•